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<http://hdl.handle.net/10459.1/64645>

The final publication is available at:

<https://doi.org/10.1504/IJTEL.2018.092706>

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# Using blogs to promote reflective dialogue in vocational education

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**Abstract:** This paper investigates how blogs can be used to support reflective dialogue in vocational education and how such dialogue can be characterised. This paper claims that a dialogic approach, where reflection is conceived as a voice immersed in a social interaction dialogue, is necessary when using blogs. Based on literature review, this study defined key higher-order thinking skills that indicate the presence of reflective dialogue on students' blog contributions. The current study states that these thinking skills can shed some light on patterns of behaviour in order to engage vocational students in reflective dialogue. The thinking skills have been clustered in four dimensions or dialogues attending to their function among the bloggers interaction: caring, critical, regulatory and creative thinking skills. These thinking skills were embedded in a blog learning project, implemented in two real classrooms settings and evaluated in two studies. Our experimental data support the claim that blogs' affordances play a key role in reflective dialogue development.

**Keywords:** Blogs, Reflexive dialogue, Thinking skills, Educational project.

**Reference** to this paper should be made as follows: Author(s) (2006) 'paper title', *Int. J. Ad Hoc and Ubiquitous Computing*, Vol. X, No. Y4, pp.000–000.

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## 1 Introduction

Educational research emphasises reflective thinking in order to achieve meaningful learning. Its importance is thoroughly discussed in the education literature (Dewey, 1916, 1989; Moon, 2005). One of the conclusions underlined in the literature is that reflective thinking requires students to trigger complex higher-order skills to examine, foster

meaning, analyse and experiment with knowledge, and ultimately produce new knowledge. At the same time, it highlights the complexity of reflection due to the large number of personal and educational variables involved. This inherent complexity of the processes involved in reflective thinking has made it difficult for educators and researchers to achieve the objective of fostering reflective thinking in their students (Wegerif, 2007, p.132.) This paper offers a

new perspective on the study and development of reflective thinking in vocational education. To this end, it takes a dialogic approach, conceived as a voice immersed in a social interaction dialogue. This reflective voice is built as a result of a 'transaction' between own experiences (intra-psychological dimension) and social experiences (inter-psychological dimension).

This paper argues that reflective dialogue unfolds in a context of shared inquiry, in which an individual's reflective dialogue is developed as a response to the reflections of their partners. It further argues that the development of reflective dialogue requires participants to be engaged in what Wegerif (2007) has called it a "dialogic space", in which individuals are orientated towards the others and they display higher-order thinking skills and, among other things, participants are willing to take part in a critical exchange of ideas, voice out their arguments, make suggestions, and answer questions.

Besides, based on the literature review that considers cognitivist and dialogic theories key pieces of research, our study will analyse and define key higher-order thinking skills that can indicate the presence of reflective dialogue on the students' blog contributions. These contributions will be refined by using experimental data. The study herein claims that the thinking skills that students display when they are engaged in reflective dialogue can be used as reflective patterns. These reflective patterns of behaviour could be a valuable resource for teachers when designing appropriate educational activities to enhance reflection in vocational studies. Finally, this paper will also examine the potential of Web 2.0 technology to facilitate the creation of a space for reflective dialogue among vocational students. Wegerif (2007) has argued that Internet and Web 2.0 technologies have opened the door to a new learning era, defining them as a "cacophony of voices offering countless opportunities for dialogic engagement with multiple perspectives on every topic". Thus, one of the paper's general objectives is to study how blog's educational features can promote the development of reflective dialogue in vocational education.

## Research Objectives

This paper has the following four research objectives, divided into two research phases:

### Research phase 1:

1. To characterise the higher-order thinking skills involved in the concept of reflective dialogue.
2. To design and implement an educational project that uses the educational affordances of blogs to foster the development of higher-order thinking skills that may engage vocational students in reflective dialogue.
3. To refine the characterisation of the higher-order thinking processes by analysing experimental data about students' contributions in blog.

### Research phase 2:

4. To identify and assess differences in the characteristics of reflective dialogue in terms of higher-order thinking skills developed when using blogs and when not to solve a complex professional challenge.

## A dialogic perspective of reflection: reflective dialogues

The concept of reflection has been studied throughout history, from classical thinkers to the modern era, but currently it remains a challenge to distinguish what systematic reflective thinking is (Rodgers, 2002). Being aware of the inherent risk in strictly defining reflection, in this paper we start from the widely accepted consideration that reflection requires active mental work by the person performing it (Freire, 2002) and it is mediated by social relations (Kemmis, 1992). Therefore, our thinking is the result of our own experiences in a specific social context.

Besides, this paper considers the contributions of Bakhtin (2004) and situates the processes involved in reflective thinking in the context of dialogues which emphasises the coexistence of two or more conflicting perspectives on a single phenomenon (Bakhtin, 2004, p.162). These dialogues have a certain intersubjective orientation, and are grounded in a specific social context. We agree with the concept of "intersubjective orientation" given by Wegerif (2007, p.80) and Habermas (1991, p.286). They consider it as a way in which participants in a dialogue can orient themselves towards each other in order to achieve mutual and sharing understanding of a joint activity.

Reflection as dialogue is conceptualised as an alternation between an internal and an external dialogue (Tsang, 2007). Reflection occurs in three stages: an internal dialogue, in which understandings and experiences are processed; an external dialogue, in which ideas and perspectives are shared with others and subsequently modified, accepted or rejected; and, finally, another internal dialogue (Tsang, 2007).

Based on literature review of dialogic theory by authors such as Freire (2002), Mercer (2000, 2013), Lipman (2003), and Wegerif (2007, 2015), this paper highlights the following four characteristics of reflective dialogue:

- Firstly, the importance of action. By means of reflective dialogue regarding their own actions, students can integrate new types of learning that will allow them to transform their vision of reality and, therefore, reality itself (Freire, 2002).
- Secondly, reflective dialogue as a promoter of collaborative reasoning processes (Wegerif and Mercer, 1997).
- Thirdly, reflective dialogue as a blend of dialogues. The different types of educational dialogues are not static or fixed, but rather interrelated and sometimes interdependent (Burbules, 1999). These dialogues have different purposes depending on the speakers' intentions.

- Fourthly, reflective dialogue as a promoter of thinking skills. Reflective dialogue should include thinking skills that promote a space for discussion. This space must combine the following dimensions: critical thinking, creativity and caring (Lipman, 2003). From a dialogic perspective this means focusing on how people respond to others' dialogues (Wegerif, 2007, 2015).

Dialogue in its full form is a very complex concept, notwithstanding, we are able to unpack it into different components that facilitate its analysis. Wegerif (2007) identifies the presence of general thinking skills such as analysis, synthesis and evaluation in the types of dialogues proposed by Lipman (2003) in his work: "Philosophy for Children".

According to Wegerif's work (2007), a new concept of reflective dialogue is conceived herein. This is conceived as the synergy of the caring, critical, regulatory and creative dialogue dimensions. Each of these dialogues constitutes a dimension of reflective dialogue and represents a certain intersubjective orientation toward the dialogue expressed by others. Each intersubjective orientation can trigger a certain way of processing the information and certain type of thinking skills can be displayed.

Caring or empathetic dialogue represents an intersubjective orientation to understanding other people's contributions; therefore thinking skills, for instance, understanding, are needed. Critical dialogue fosters making judgements and the critical assessment of others' contributions. Regulatory dialogue focuses on the planning and regulates the joint tasks to be performed. And creative dialogue aims at promoting the joint construction of the new knowledge generated.

In order to characterize the thinking skills involved in the development of reflective dialogue and as a response to dialogues expressed by others, we reviewed and compared the work of Lipman (2003), Wegerif (2007), Moon (2005), Dewey (1916) and Anderson et al. (2001). As a conclusion of this literature review, we propose a concept of reflective dialogue that includes four dimensions: caring, critical, regulatory and creative. Each dimension represents a different intersubjectivity orientation to the others and involves different thinking skills. Figure 1 shows the four dimensions of reflective dialogue and the thinking skills involved. These four dimensions are interrelated and sometimes interdependent. Reflective dialogue is represented at the centre of the Figure 1 because it can be seen as a result of the synergy between the purposes and thinking skills involved in the other four dimensions or dialogues.

Figure 1. Proposed conceptualisation of reflexive dialogue: dimensions and thinking skills involved

The introduction of reading as a thinking skill is motivated by the work done by Deng and Yuen (2010), whose conclusions indicate that reading not only increased the feeling of unity, but also triggered the process of reflection

by the readers (Beaudoin, 2002; Ellison and Wu, 2008). Therefore, reading blogs is an important concept to consider, which lies between publishing and responding.

The characterisation of reflective dialogue presented here could be a valuable contribution to education because it enables the design of educational activities that promote all four types of reflective dialogue. Furthermore, this characterisation might be used as a tool for analysis and assessment to determine the progress made by students on the development of reflective dialogue and the further design of appropriate scaffolds to increase students' reflective dialogue. The empirical part of this paper analyses these two possible contributions of our work.

The next section will look at the literature review related to the educational potential of blogs to promote reflective dialogue.

### **Blog affordances to promote reflective dialogue**

Blogs can be considered a constant invitation to dialogue as they allow students to express their thoughts on their own posts or through comments on their classmates' posts. Blogs are an excellent medium for developing reflection and self-expression skills (Chu et al. 2012) that can be used at any time, including outside school hours and off school premises.

In this line, Deng and Yuen (2010) developed a working framework with blogs intended to promote reflective processes. Figure 2 presents the main dimensions of Deng and Yuen proposal. This working framework defines two dimensions of reflective dialogue: the individual/community dimension (horizontal axis in Figure 2) and the social/cognitive dimension (vertical axis in Figure 2). The interrelationship of these two dimensions with the three main types of actions that can be performed on a blog – writing, reading, and commenting – led Deng and Yuen (2010) to define six potential processes related to reflective thinking that can be promoted through the use of blogs: a) Blogs enable the expression of personal feelings and thoughts (self-expression); b) Blogs encourage self-reflection; c) Reading blogs promotes feelings of connection and social relationships within a community (social connection); d) Stories read on blogs can be a source of inspiration for reflection (reflection triggered by reading); e) Interactions with peers in the comment sections of blogs enables the exchange of information and social support (social interaction); f) Blogs enable reflective dialogue.

Figure 2. Framework of the educational affordances of blogs. From: Deng y Yuen (2010, 10).

The educational project developed in this paper was structured according to the working framework outlined by Deng and Yuen (2010), based on the three types of actions that can be performed on a blog; moreover, in order to reach the objectives of this research project, it was added a fourth type of action: rewriting, as it will be explained in the next section. Thus, in addition to writing, reading and

commenting, students were encouraged to rewrite their proposals based on their classmates' comments. This action was intended to further promote reflective dialogue among students, as well as their awareness of the joint knowledge construction.

## Methodology

The research methodology was divided into two phases or studies, which were carried out in two consecutive academic years. Each phase lasted 6 weeks and involved vocational education students from an upper-secondary school in Castellón (Spain). Students participated in an educational project that used blogs as a tool to promote reflective dialogue. Firstly, this paper will review the characteristics of the common educational project carried out over the two research phases presented in this paper. Secondly, the research methodology used in each phase will be discussed and finally, results and conclusions will be presented.

## Educational project

The educational project designed, conducted and evaluated during the two research phases of this paper was carried out among vocational early childhood education students. It consisted in solving real challenges related with professional teaching situations.

The educational project was designed according to a Challenge-based learning approach (Johnson et al. 2009). The students used blogs to organise, collaborate and share their solutions to ill-defined, multidisciplinary challenges. This encouraged them to reflect on the practical contribution of their proposals for early childhood education.

The students' writing tasks to solve the proposed challenges bridged the gap existing between declarative or conceptual knowledge and procedural knowledge. To this end, the educational tasks gathered three conditions; Firstly, the tasks were based on situations that students could encounter in their future workplace; Secondly, blog tasks encouraged them to reflect on their own experiences, conceptualise and theorise them. Thirdly, the tasks were oriented toward understanding and solving practical issues (Gavota et al., 2010). An example of a task included in the educational project is shown in Table 1.

Table 1. Example of an educational task

Students solved all the project tasks in teams of 5/6, following the collaborative work process outlined in Figure 3.

Therefore, students were encouraged to solve the challenges through blogs following three specific steps. In the first step, writing, each student proposes a personal solution on his/her blog. In the second step, students read and comment on each other's blogs in order to improve their peers' work. Students were provided with pedagogical support in order to enhance reflective dialogue. In the third step, each student was asked to re-write his or her initial proposal taking into

account the feedback they received from their classmates and what they have learned from reading their peers' blogs. Therefore, all the students acted as bloggers and reviewers at the same time. Students had one week to fulfil each step.

Figure 3. Collaborative work process on blogs to promote reflective dialogue in vocational education.

Figure 3 shows the three recommended steps for solving the proposed challenges: 1) write; 2) read and comment; 3) re-write.

Besides, during all the project students were encouraged to express their ideas, arguments, proposals and feelings (Deng and Yuen, 2010) in a multi-modal context by integrating pictures, audio, or even video clips into their blog space (Farmer, 2004). The multi-modal representation of the students' ideas and the fact that blogs were established as a public access and opened to world web population helped that the dialogical blog space was extended by the multi-voiced provided by the Internet (Hall and Davison, 2007). Therefore, in our view, the design of the educational use of blogs can become a tool for opening, widening, deepening and resourcing dialogic spaces (Wegerif, 2007) and solving lifelike challenges.

## Educational scaffolding

In the implementation of the educational project, the following four types of scaffolding are explicitly worked on through specific activities included in the educational project. These four types of scaffolds have the common goal of promoting varied intersubjective orientations and the thinking skills involved in the concept of reflective dialogue:

- Scaffolding for the development of multiple viewpoints and creative thinking. The Six Thinking Hats (De Bono 1999) methodological technique was used.
- Scaffolding for written arguments. Toulmin's argumentative model (Toulmin 2003) was used.
- Scaffolding for writing on online work environments. Advice consistent with Tejedor's approach (Tejedor 2008) was given.
- Scaffolding to encourage student participation. Motivational strategies proposed by Román y Díez (1988) were presented during the project.

## Research phase 1: characterisation of reflective dialogue using blogs

### Participants

The study used an intentional or judgement sample of 11 students from a total class group of 23 (Morales 2012). This was achieved by choosing two of a total of four work groups. All students were between the ages of 19 and 23.



## Design and procedure

The research design consisted of a multiple case study of 11 students who solved four complex challenges using their personal blogs with an open network configuration. In this first research phase, students worked using the blog for 12 weeks. The collaborative work in the blog was part of the vocational course and it was evaluated by the teacher.

## Assessment instruments and data analysis

All students' blog posts regarding the resolution of the four challenges was characterised in accordance with the following four-phase process: (a) Collection of the students' blog entries and comments on solving the challenge; (b) Segmentation of the data collected into the analysis unit, which was the smallest meaningful unit with a single function used by the student (Anderson et al. 2001, 8-9); (c) Categorisation of the meaningful units, accordingly to the thinking skills involved in each dimension of the reflective dialogue. Annex 1 shows the explanation of the coding scheme designed in this paper, including the indicators used for the categorisation of each thinking skill where examples are provided too. (d) Counting the thinking skills developed, using a program designed for that purpose. Counting was based on the presence or absence of each thinking skill.

In order to ensure the reliability of the results, the analysis procedure was performed by two researchers and repeated. The researchers had direct access to the students' tasks and noted if the students had used multimedia resources or hyperlinks. Additionally, the Kappa index was calculated for the four dimensions of reflective dialogue, resulting in  $K = 0.9511$ , indicating a high degree of agreement and consistency (Landis and Koch 1977).

In the first phase of the research, each student wrote 4 blog entries (one for each challenge proposed). In total, 44 blog entries and 133 blog comments were analysed.

## Results and discussion of Phase 1 of the research

In Figure 4 are displayed the direct scores of the thinking skills found in the whole corpus of our data which involved caring, critical, regulatory and creative dialogue. .

The results showed that the educational affordances of blogs provided a valuable context for students to develop all the thinking skills involved in reflective dialogue, as it is shown in Figure 4.

Figure 4. Thinking skills developed during the blog learning project

Regarding the creative dialogue, students largely developed the thinking skill generating. This result is consistent with Loving et al., (2007), who found that most participants in their blogs offered well thought-out and justified arguments, generated new ideas and solutions, or assessed solutions critically.

With respect to critical dialogue, the thinking skill widely displayed by students in the blog was Explaining. Using this skill, students assimilated the content of the subject and, in most cases, showed understanding and were able to use new knowledge to develop coherent and thoughtful solutions (Wopereis et al., 2010; Yang 2009). Besides, it is worth to mention the high presence of Interpreting thinking skill in students' blog contributions. The contributions that show this thinking skill were those that reviewed classmates' contributions in which students critically assessed different possible answers to a given problem. This thinking skill came up to detect inconsistencies in the classmates' solutions to the challenge, or assess the appropriateness of a given solution.

Finally, and in relation to caring dialogue, attention should be drawn to the high presence in the students' blog reviews of the thinking skill Recognising. The intersubjective aim of this type of dialogue is to develop awareness about others' perspectives and to pay attention to the challenge to be solved. This finding supports those of Deng and Yuen (2010), who noted that the interactive aspects of blogs are mostly used to exchange social support.

Figure 5. Dimensions of reflective dialogue developed during the blog learning project

In Figure 5 is displayed the presence of each dialogue in the corpus of our data. As it can be seen, throughout the educational project, the students used the thinking skills involved in all four dimensions of reflective dialogue: caring, critical, regulatory and creative. However, critical dialogue was the dimension developed most (Figure 5). The educative use of the blog in this project can explain this result. In our project, students had to write a blog contribution, read, review and comment classmates' contributions in order to find the best solution of a real professional challenge. Doing so, students had to review multiple possible responses to a same challenge, advocate solutions, lay them out in a comprehensible manner, and draw conclusions, internalising the concepts addressed by the project (Wopereis et al., 2010; Yang, 2009).

## Research phase 2: analysis of differences in the presence of reflective dialogue with and without the use of blogs

In the previous research phase, it was stated the use of blogs to solve a complex challenge can promote the development of key thinking skills involved in the concept of reflective dialogue. In this second research phase, the characteristics of students' reflective dialogue will be compared under two conditions: bloggers and non-bloggers. This second research phase will give a better insight on the educational potential of blogs for the development of reflective dialogue.

## Participants

Samples of fourteen and eleven students were chosen from two class groups of twenty and thirty students, respectively. Students were aged between 19 and 33 years. 56.8% of the students came from secondary school, and 29.3% were combining their studies with work.

## Design and procedure

A quasi-experimental design was used, including measures before and after the intervention and two experimental conditions – blogger vs non- blogger – for the dependent variable “reflective dialogue”. The group of 14 students was the experimental group, while the group of 11 was the control group.

Both groups completed the four challenges related with professional situations. Besides, both groups received the same scaffolds to solve these complex situations. The first challenge was intended to get students familiarised with challenged-based activities. The second challenge was used as a pre-test measurement, and the fourth, as a post-test measurement.

The students in the control group completed the same educational project as the experimental group and the steps to solve the challenges were adapted as it follows: a) in the writing step, control group students used a text editor instead of blogs. b) The reading and commenting step was performed face to face in a three-hour class and organized in teams. This step is not analysed in this study. And, c) students re-write their individual proposal using the text editor. The students in the experimental group performed all the steps required to complete the challenges online, through their personal blogs.

In this study, we will analyse and compare the reflective dialogue embed in the students' individual proposal as it is performed during the first step of writing.

## Assessment instruments and data analysis

The thinking skills involved in reflective dialogue and developed during the resolution of the second and fourth challenges were characterised following the same procedure as presented in the first research study. The two challenges were carried out 14 weeks apart from one another.

The same procedure was used to characterise the reflective dialogue as explained in the previous section for the first phase of the research.

This section will present the results of the step called: writing, which corresponded to the students' individual proposal to solve the challenge. Thus, in all, 50 individual proposals were analysed (22 corresponding to the control group and 28 to the experimental group).

**Results and discussion of the second phase of the research: differences in the development of reflective dialogue between blogger and non-bloggers.**

The Mann-Whitney U-test was used to compare the average obtained for the control and experimental groups. The test revealed significant differences between the two groups in the evolution of reflective dialogue skills. These significant differences reflect the divergence in how the dimensions of reflective dialogue developed in each group (Table 2).

Table 2 shows the evolution of the reflective dialogue dimensions. Regulatory dialogue is not statistically comparable because the Levene test results show that it is heteroscedastic. Consequently, although the results for regulatory dialogue have been included, they should be carefully considered.

Table 2. Comparison of reflective dialogue dimensions in the control and experimental groups

As shown in Figure 6, caring, critical and regulatory dialogues show opposite trends in each group. In the experimental group, caring and critical dialogue increased, whereas in the control group, they decreased.

Figure 6 Evolution of reflective dialogue dimensions for the control and experimental groups

Students in the experimental group showed greater development in critical dialogue. This finding reinforce the arguments proposed by Moon (2005, 189), who has stated that learning is promoted in a variety of ways through the writing of reflective journals, because it encourages critical thinking. In the same direction, Ellison and Wu (2008) have argued that critical writing is central to the use of blogs because it engages bloggers to consider divergent views.

A more positive evolution was likewise observed in the experimental group with regard to caring dialogue. This finding is consistent with those reported by Deng and Yuen (2010), who emphasised the usefulness of blogs for exchanging social support.

Finally, the evolution of creative dialogue was similar in both groups, Control and Experimental students showed a positive progress when proposing creative solutions to the challenges. This finding, as noted by Wopereis et al. (2010), may be due to the educational support provided.

In sum, the results indicate that the educational affordances of blogs can be used effectively to enhance the development of reflective dialogue skills in students, especially with regard to the caring and critical dialogue dimensions.

## Conclusions

*The relevance of studying reflection from a dialogic perspective*

This paper has presented the design, implementation and analysis of an educational project intended to promote the development of reflection from a dialogic perspective. As a result, four voices or dialogues were identified: caring dialogue, critical dialogue, regulatory dialogue and creative dialogue.

The empirical results show that the educational use of blogs can promote the creation of a dialogic space in which students can develop key thinking skills involved in the promotion of the four voices or dialogues aimed at: (a) Perceiving the meaning of the information provided by others, as well as their point of view -caring dialogue; (b) Incorporating new knowledge into their cognitive structure and relating it to prior knowledge -critical dialogue; (c) Proposing solutions or offering advice or suggestions with regard to the use of the creative concepts being addressed -creative dialogue; (d) Planning and monitoring actions to solve the joint task -regulatory dialogue.

#### *An instrument to promote and analyse the presence of reflective dialogue*

Our study has also contributed with an instrument that characterizes the thinking skills involved in the four dimensions of reflective dialogue. This instrument takes the form of a coding scheme and it is presented in annex 1. This instrument has been built in dialogue with the revision of existing literature and experimental data. In our opinion this instrument can be a valuable contribution for designing effective educational activities to promote reflective dialogue because teachers can design appropriate activities and scaffolds to enhance specific thinking skills present in reflective dialogue.

#### *Blogs' potential for promoting reflective dialogue*

The results of this study support the claim that educational use of blogs' affordances can play an important role in the development of reflective skills. The blogs enabled the creation of a suitable space for the development of reflective dialogue, with special mention to the caring dialogue, critical dialogue, and creative dialogue dimensions thereof.

In our view, the specific blog affordances that contributed to the promotion of reflective dialogue are the following three:

Firstly, blogs support hypertext and multimedia content and, thus, encourage students to express and support their ideas and arguments with text, images, audio files, videos, flash animations and links to documents or other websites. This affordance provides what some authors have called 'a third dimension' in the representation of an idea, which offers wider and in-depth paths for understanding the idea (Marquès 2006, p.5). This hypertext and multimedia content can be seen as an indicator of others' voices and provides a space that is both deep and wide to support the development of reflective dialogue.

Secondly, blogs offer more opportunities to challenge peers' different points of view (Dailey 2006; Yang 2009) without the time and space constraints found in face-to-face educational settings (Ellison and Wu 2008; Ferdig and Trammell 2004). Therefore, blogs encourage students to interact (Huang et al., 2011; Ellison and Wu 2008; Wopereis et al., 2010). This affordance is particularly relevant in vocational education when solving professional challenges as colleagues' point of view are important in order to find the best solution.

Thirdly, the potentially large audience of the blog publication on an open network generates an additional sense of responsibility on vocational students (Ferdig and Trammell 2004).

In conclusion, this paper contributes with empirical evidence to support the claim that blogs' affordances can play a key role in students' thinking skills development involved in reflective dialogue by handling multiple perspectives. These perspectives are posted by the group of students through their arguments on the blogs, including videos, links and avatars (Wegerif 2007, 2015).

#### *The importance of designing a scaffolded and structured educational process to promote reflective dialogue through the use of blogs: educational implications*

Our study highlights the importance of the pedagogical use of blogs' affordances for promoting reflective dialogue in vocational education. It considers the design of an educational project that includes various types of scaffolds to enhance the development of the thinking skills involved in reflective dialogue. The pedagogical scaffolds embedded in our blog educative project were as it follows:

- Design of a collaborative work structure using a blog as presented in Figure 3.
- Proposal of challenge-based learning approach.
- Encouragement of peer and self-assessment to provide high-quality feedback on their peers' blogs (Chu et al., 2012).
- Design of pedagogical scaffolds for the development of thinking skills involved in reflective dialogue.
- Promotion of persuasive writing skills.
- Design of scaffolds in order to develop online writing processes.

#### **Limitations and implications for future research**

Our work has built an instrument to analyse and evaluate students' development of reflective dialogue. This instrument takes the form of a coding scheme and it has been built considering existing literature. However, it requires further studies to validate its design and its potential for the analysis of reflective dialogue development.

Besides, our study also has some limitations regarding the methodology used. It should be highlighted that the sample size considered in this study is small to allow us to draw general and transferable conclusions to other contexts. As future investigation aim, further design studies should be carried out with a wider sample and scope of study.

In spite of the highlighted limitations, this study has identified key elements of the reflexive dialogue and its methodological aspects for the use of the blogs as an



educational tool that can promote reflective dialogue development in vocational education.

## Acknowledgement

This research was funded by the Ministerio de Economía y Competitividad of the Spanish Government (project numbers: EDU2012-32415, EDU2016-80258-R).

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**Table 1 Example of educational task**

John is eighteen month old and he is in his first year in a nursery school, Anna is his teacher. John's classmates have taken their first steps and some of them are quite autonomous, whereas John hardly gets stand up, even being helped. This is why Anna is concerned about John's development. Do you think she should worry about? Why or Why not? If you were the teacher, What would you do?

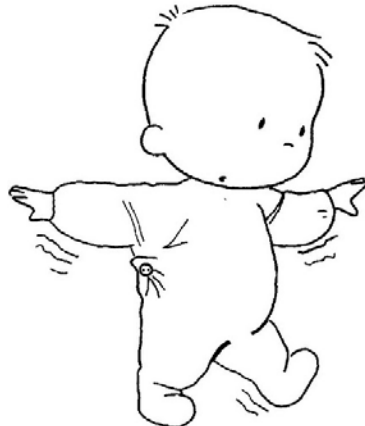
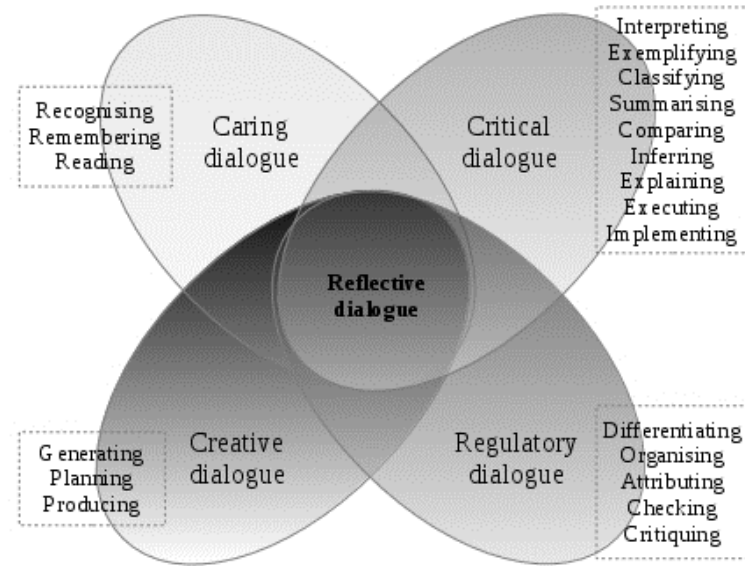


Image from: <http://infancialatina.blogspot.com.es/2011/02/bebes.html>

**Table 2. Comparison of reflective dialogue dimensions in the control and experimental groups**

	Caring dialogue	Critical dialogue	Creative dialogue
Mann-Whitney U-test	30.500	40.000	39.500
Exact significance [2*(1 tailed sig.)]	0.009	0.044	0.027
Mean rank of control group	96.500	106.000	105.500
Mean rank of experimental group	228.500	219.000	219.500





**Figure 1. Proposed conceptualisation of reflexive dialogue: dimensions and thinking skills involved**

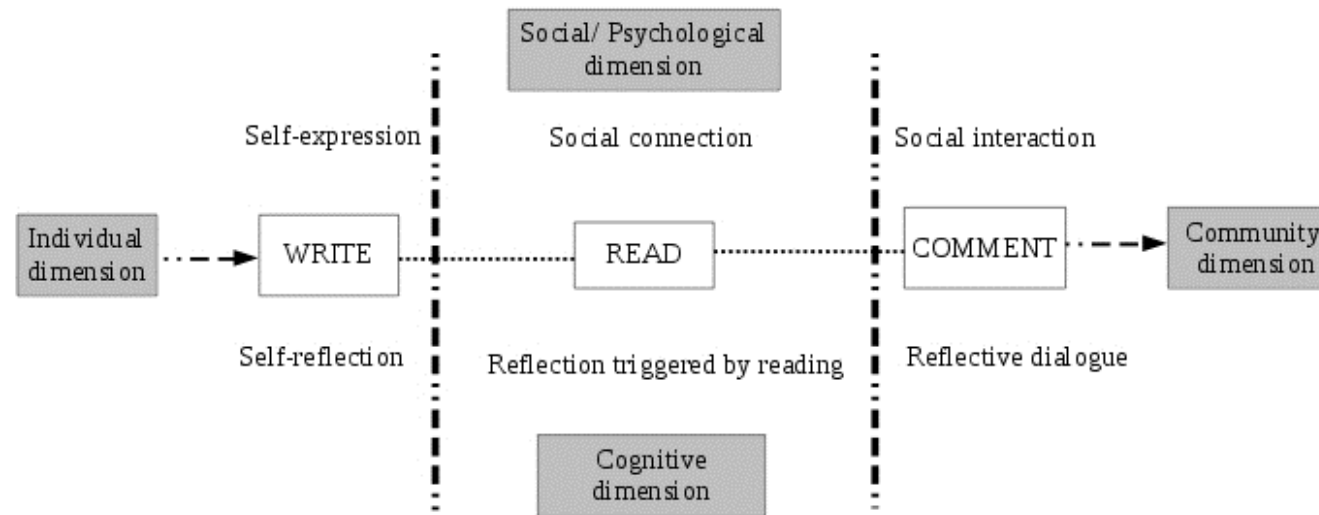
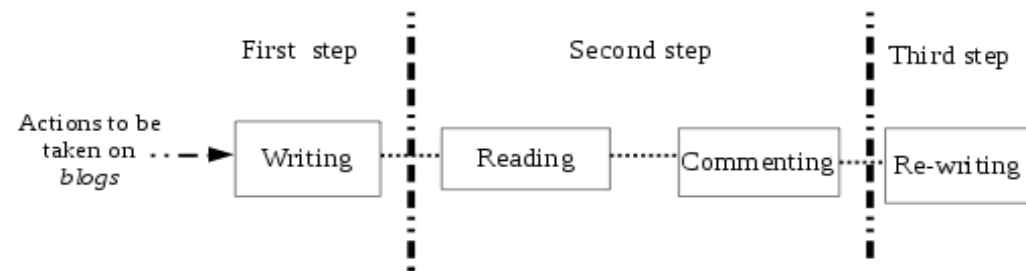


Figure 2. Framework of the educational affordances of blogs. From: Deng and Yuen (2010, 10).



**Figure 3. Collaborative work process on blogs to promote reflective dialogue in vocational education.**

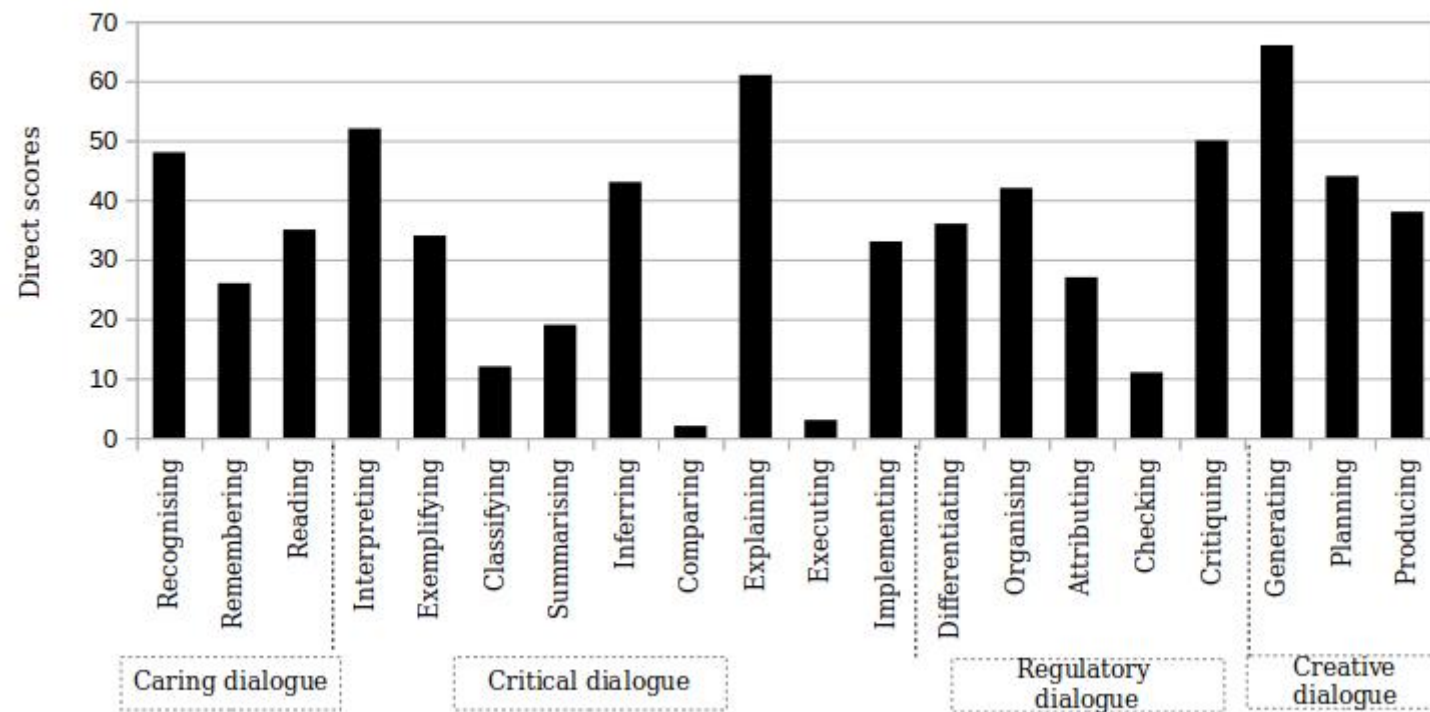


Figure 4. Thinking skills developed during the blog learning project



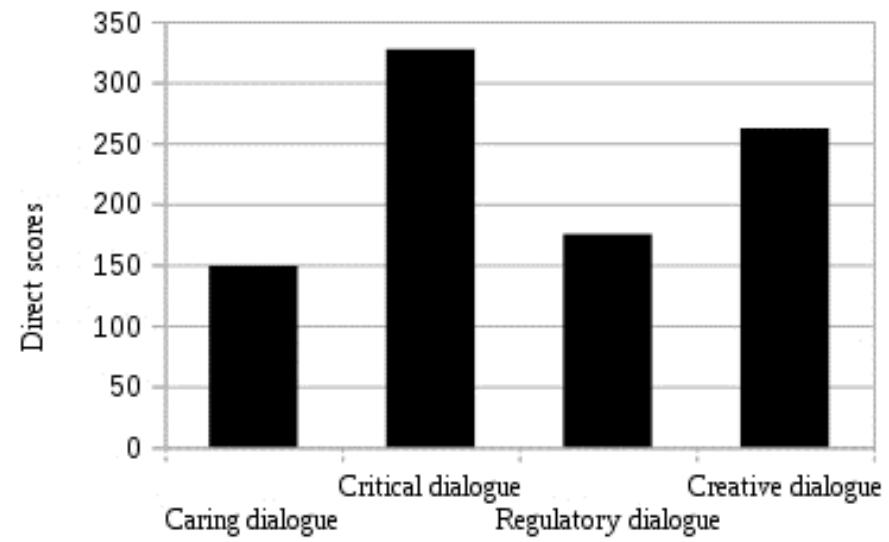
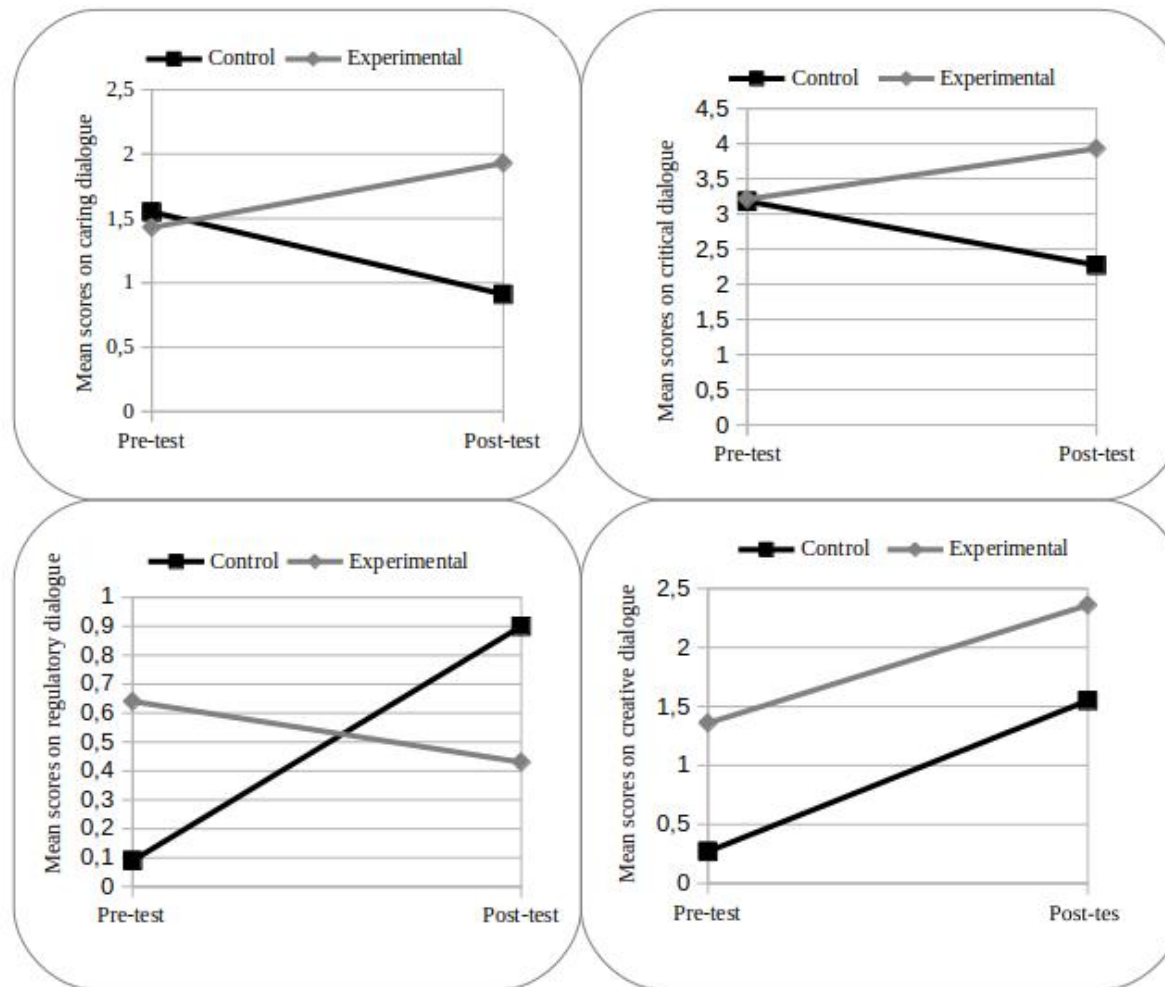


Figure 5. Dimensions of reflective dialogue developed during the blog learning project



**Figure 6. Evolution of reflective dialogue dimensions for the control and experimental groups**

### Annex 1: The coding scheme used for categorisation each thinking skill

Dimension	Thinking skills	Indicators	Examples
Caring dialogue	Recognising: Perceiving, appreciating and recognising a feeling. Making assessments without providing specific details or aspects for making the assessment.	He did a very good (or bad) job/Sounds good/Greetings and goodbyes	It is true that children develop at different rates.
	Remembering: Retrieving information from memory.	Use of the past tense	Anecdotally, I can say I didn't take my first steps until I was 15 months old.
	Reading: Locating information.	Internet, papers, notes	In this case, Joan is 18 months old, and he still does not walk.
Critical dialogue	Interpreting: Clarifying, interpreting a thought, giving an opinion regarding the relevance (or lack thereof) of a given aspect.	I found it interesting/suitable/right... I think/believe...	I think the girl's behaviour is due to a lack of limits at home.
	Exemplifying: Illustrating or giving examples.	Examples/In other words...	Amongst themselves: making contact, making the Educative Project of the school designing a programme, etc.
	Classifying: Sorting into categories.	I sorted them into...	Two types of factors influence motor development: internal factors and external factors.
	Summarising: Generalising or simplifying the information in a smaller space.	In summary.../In short...	In short, working on social skills at the school would give the children a chance to prepare themselves for the near future, could provide an effective way for them to expand their social relations, and, especially, could teach them to handle and control their own skills.
	Comparing: Comparing and contrasting information with others or with that found in different sources.	Like/the same as/as	Like she did, I would have tried to make him understand how normal his attitude was.
	Inferring: Coming to a conclusion based on information.	That is why/Therefore/In conclusion...	Perhaps Lucas is a calm child and, therefore, does not need to start walking yet.
	Explaining: Building a model of cause and effect.	Because.../given that.../since...	There is no need to alert their teacher, Ana, because, as has rightly been noted, every child develops at his or her own pace.

	Executing: Performing a familiar task (computer-related, methodological, etc.).	I would use	I would use a power point presentation to support my case
	Implementing: Engaging in an unfamiliar task. Putting yourself in someone else's place (given that the students are studying for an advanced vocational training qualification in child education).	In that case, I would recommend.../If I were you, I would...	In my opinion, and putting myself in Ana's place...
Regulatory dialogue	Differentiating: Highlighting something about the other things. Showing a list of objectives, suggestions.	I chose X/I just wanted to say...	I would suggest the following objectives with regard to group cohesion: (...)
	Organising: Looking for structural coherence, integrating information (videos or images), changing the structure of the text.	I redid it/I deleted the whole thing/I added	Videos/Images
	Attributing: Critically analysing the work or thought Coming to a conclusion regarding one's own work or the work that has yet to be done.	My job is to.../I'll keep it in mind/Questioning different aspects	Teachers share their experience, knowledge and desire to do their job well in a profession that they love and that requires both a calling and considerable dedication.
	Checking: Detecting, monitoring or testing a solution or possible solution. Asking.	That was not what we were asked to do/If A were to happen, I would do B	I would like to ask whether Lorena also has tantrums in other contexts, such as at home
	Judging: Criticising others' work.	Her/His work was...	Maria's teacher's response is normal but limited.
Creative dialogue	Generating: Providing an idea for oneself or for others. The conditional is used to talk about doing things, i.e. it is not the solution or proposal itself but rather a possible solution or proposal.	I would do X/ Another reason might be.../You should...	You should talk to the student's parents or reach an agreement with them, ask them for help.
	Planning: Designing a method to perform a task.	I started by.../First of all.../Next...	But first I have to ask John's parents if they are offering him the support he needs to learn to walk.



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Producing: Developing a solution, proposing the solution, presenting the proposal. The student describes what he or she will do.

I suggested.../The solution.../To that end.../You need to.../What you should do is...

One original solution for when Marta opens and closes drawers and generally makes a mess in the room would be to turn it into a dynamic game consisting in picking up everything on the floor.

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